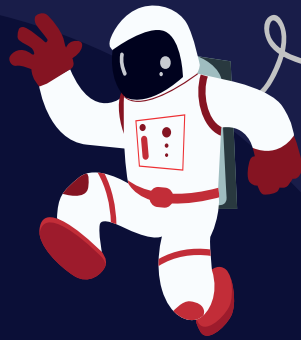


4th Primary

COMET

In Science

Prepared By.
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For Online Sessions



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Lesson 01

Adaptation and survival

Adaptation:

A change that helps the living organism survive in its environment.

Or it is a characteristic of living organisms that allows them to change over generations and help them to survive and reproduce in its environment (ecosystem). And not be extinct.

Mention the problems that affect survival of living organisms ?

1. Low or high temperature (climate change)
2. Scarcity or plenty of water.
3. Lack or existence of food or shelter.

Give reason for ?




- Living organisms seek for adaptation.
To survive in its environment.

1. Adaptation helps the living organisms in all these except

- ☐ A Survival
 ☐ B Reproduction
 ☐ C Extinction
 ☐ D Hiding

Climate change is one reason why living organisms adapt over generations.

How different living organism protect themselves from extreme heat ?

Plant	Animal	Human
<p>Ex: palm tree</p> <p>Palm leaves are covered with waxy layer to protect themselves from high temperature.</p> 	<p>Ex: starred agama lizard (desert lizard)</p> <p>It hides in shaded area during hot sunny days in desert.</p> 	<p>Human use umbrella and wear light clothes to avoid hot climate.</p> 



What happens if ?

1. Starred agama lizard was transferred into a cold climate habitat.

It will stop hiding in shaded area during day time.

Second Adaptation in Penguin's feet

What about cold climate? We will study adaptation in penguin's feet to survive in cold

What happens if ?

1. You stand on ice barefoot for 5 minutes.

Your feet will get frozen.

Penguin is a flightless bird that lives in the polar habitat in **Antarctica** (one of the coldest places on Earth).

- Penguin's body is covered with an insulating layer of fat and thick downy feathers.

Ways of adaptation in penguin to survive in cold climate:

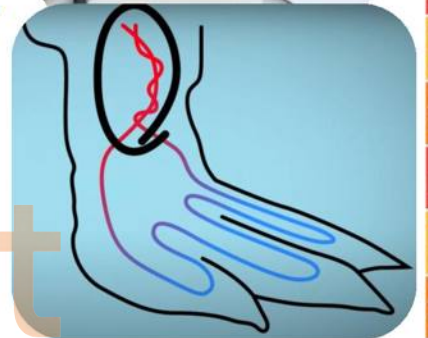
- Although penguin's feet aren't covered with fatty layer or feathers, they don't freeze.

Due to the blood vessels in penguin's feet are wrapped (weaved) around each other that allow heat transfer from warm blood vessels into cold blood vessels.

Blood vessels
bringing warm
blood from the
upper body

Heat is
transferred into

Blood vessels
having cold
blood from the
feet



Give reason for ?

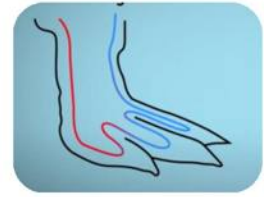
- Penguin's body is covered with fat and thick downy feathers.
To keep penguin's body warm by trapping warm air against its skin.
- Penguin's feet don't freeze from standing on ice.
Due to the blood vessels in penguin's feet are wrapped (weaved) around each other that allow heat transfer from warm blood vessels into cold blood vessels

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2



What will happen if ... ?



- Blood vessels in penguin's feet aren't weaved around each other.
Penguin's feet will freeze.

NOTE

Habitat: It is the natural environment where the living organism lives.

Ecosystem: the interaction between living and non-living things in an environment.

Choose ?

1. Penguin is one of the

- ☐ A Reptiles ☐ B Birds ☐ C Mammals ☐ D Fish

2. If you hold a piece of ice in your hand, your fingers get numb after a few

- ☐ A Minutes ☐ B Weeks ☐ C Hours ☐ D Days

3. Starred agama lizard hides in shaded area to feel in sunny days.

- ☐ A Warm ☐ B Hot ☐ C Cool ☐ D Frozen

4. exchange occurs between blood vessels in penguin's feet, to not freeze.

- ☐ A Water ☐ B Fats ☐ C Blubber ☐ D Heat

5. Penguin has in its skin to keep it warm.

- ☐ A Fat ☐ B Sugar ☐ C Proteins ☐ D Juice

6. Penguins live in

- ☐ A North pole ☐ B Africa ☐ C Antarctica ☐ D Tropical zone

7. Penguin's body is covered with to keep it warm in cold weather.

- ☐ A Fur ☐ B Hair ☐ C Scales ☐ D Feathers

8. Thick downy feathers trap against penguin's skin.

- ☐ A Cold air ☐ B Cold water ☐ C Warm air ☐ D Warm water

9. Blood vessels in penguin's feet bring up from to the rest of the body.

- ☐ A Cold blood ☐ B Warm blood ☐ C Warm water ☐ D Cold water



Write the scientific term ?

1. The habitat of the penguin. (.....)
2. A feature that helps the living organism to survive and reproduce in the environment. (.....)
3. They cover penguin's body that trap warm air against its skin. (.....)
4. A reptile that lives in desert habitat and hides in shaded area in hot sunny days. (.....)

Put (✓) or (×) ?

1. Penguin lives in a polar habitat. ()
2. Penguin's body is covered with thick feathers to keep it cold. ()
3. Leaves of palm trees are covered with waxy layer. ()
4. Starred agama lizard hides in shaded area to stay warm in sunny days. ()
5. Penguin's feet are covered with thick downy feathers. ()
6. Adaptation helps living organisms to survive in their habitat. ()
7. Penguin's skin has an insulating layer of fat to keep its body cold. ()

Give reason for ?

1. Blood vessels in penguin's feet are wrapped on each other.
.....
2. Penguin's skin has a fatty layer and its body is covered with thick feathers.
.....
3. Desert lizard hides in shaded area in hot sunny days.
.....

What happens if ?

1. Blood vessels in penguin's feet aren't weaved around each others.
.....
2. Penguin's body is covered with thin feathers.
.....
3. You stand barefoot on ice for 5 minutes.
.....



Camouflage:

A property in which the animal blend in with surrounding environment to hide from its predators or preys.

Adaptation of some animals through camouflage to survive in their habitats:

Animal	Its Habitat	Its adaptation
1 Polar 	It lives in Arctic (polar) regions.	<ul style="list-style-type: none"> ▪ Polar bear has white thick fur. G.R. 1. <u>It has white fur</u> to blend in with snow and sneak up on its prey. 2. <u>It has thick fur</u> to it warm.
2 Dark & brown   Dark bear Brown bear	They live in forests. (Tropical habitat)	<ul style="list-style-type: none"> ▪ Dark and brown bears have dark fur. G.R. To hide among trees to hunt their preys.
3 Caracal & fennec fox   Caracal Fennec fox	They live in desert.	<ul style="list-style-type: none"> ▪ Caracal and fennec fox have sandy-colored (tan-colored) fur. G.R. To blend in with sand or desert and hide for their preys or predators.
4 Some lizards 	They live in desert.	<ul style="list-style-type: none"> ▪ Lizards have colorful scales. G.R. To blend in with rocks and to not be seen easily.



Choose ?

1. Polar bear has fur to blend in arctic environment.

- ☐ A Brown ☐ B Black ☐ C White ☐ D Yellow

2. lives in desert habitat.

- ☐ A Penguin ☐ B Fennec fox ☐ C Dark bear ☐ D Polar bear

3. has dark fur to blend in with forest trees.

- ☐ A Brown bear ☐ B Penguin ☐ C Lizard ☐ D Polar bear

4. A penguin Could be a prey for the

- ☐ A Dark bear ☐ B Polar bear ☐ C Fennec fox ☐ D Caracal

5. lizards have colorful to hide among rocks.

- ☐ A Fur ☐ B Feathers ☐ C Scales ☐ D Shells

6. All of these live in desert except

- ☐ A Fennec fox ☐ B Caracal ☐ C Brown bear ☐ D Camel

7. Polar bear has white fur to blend in with

- ☐ A Sand ☐ B Snow ☐ C Trees ☐ D Rocks

9. have sandy-colored fur.

- ☐ A Polar bear ☐ B Desert lizard ☐ C Dark bear ☐ D Fennec fox

Write the scientific term ?

1. A way of adaptation in which an animal blend in with surrounding environment.

(.....)

2. The habitat of brown and dark bears.

(.....)

3. They help lizards to hide among rocks.

(.....)

4. It covers the body of a bear to help it to blend in with snow.

(.....)

5. A fox that lives in desert and has a sandy-colored fur.

(.....)

6. A type of cats that live in desert and have tan-colored fur.

(.....)

7. A property that helps the animals to be hard seen in their environment. (.....)



Put (✓) or (×)



1. Polar bear lives in the arctic habitat where it is extremely hot. ()
2. Polar bear has a thin white fur. ()
3. Bears that live in forests have dark colored fur. ()
4. Caracal's body is coated with sandy-colored feathers. ()
5. Fennec fox and brown bear live in the same habitat. ()
6. Camouflage helps living organisms to adapt with their habitat climate conditions. ()
7. The desert lizard has colorful scales to blend in with large green trees. ()
8. Bears that live in forest have darker fur than the bears live in polar habitat. ()
9. The thick white of polar bear keeps its body cold. ()
10. The sandy-colored fur of fennec fox helps it to blend in with forest habitat. ()
11. Desert lizards have colorful feathers to blend in with the rocks. ()

Give reason for



1. Polar bear has a white fur, but brown bear has a dark fur.
.....
2. Desert lizards have colorful scale on their bodies.
.....
3. Fennec fox and caracal have a sandy-colored fur.
.....
4. Polar bear has a thick fur.
.....

What happens if



1. Caracal has a black fur.
.....
2. Polar bear has thin fur.
.....
3. A desert lizard stands on a yellow rock.
.....



Match from column (B) what suits it in column (A) ?

(A)	(B)
1. Polar bear	a. Has dark thick fur
2. Fennec fox	b. Has white thick fur
3. Brown bear	c. Has sandy-colored fur
4. Desert lizard	d. Has colorful scales

1.

2.

3.

4.

(A)	(B)
1. Brown bear	a. Lives in desert habitat.
2. Penguin	b. Lives in polar habitat and is coated with white thick fur
3. Caracal	c. Lives in polar habitat and is coated with thick feathers.
4. Polar bear	d. Lives in forest ecosystem.

1.

2.

3.

4.

Answer the following questions with the suitable picture(s) ?



(A)



(B)



(C)



(D)



(E)



(F)



(G)



(H)

- From the animal that could live in arctic habitat are
- From the animal that could live in desert habitat are
- From the animal that could live in forest habitat are



Lesson 2

Types of Adaptation

Types of adaptation

1 Structural (physical)

It is the change in the structure of living organism's body to adapt in its environment.

Examples:



Blood vessels in penguin feet



Thick fur in polar bear

2 Behavioral adaptation

It is the change in the behavior or act of the living organism to adapt in its environment.

Examples:



Desert lizard looks for shade area in sunny days



Migration of birds towards warm regions.

Migration:

Travel of some birds long distance at certain time of the year.

Way of adaptation	Structural or behavioral
1. Caracal has a sandy colored fur.	
2. Birds migrate in winter season.	
3. Bat is more active at night.	
4. Panther chameleon has a V-shaped foot.	
5. Desert lizard hides in shaded area in hot days.	
6. Palm tree leaves are covered with waxy layer.	
7. Penguin has a fatty layer in its skin.	
8. Polar bear has a thick white fur.	
9. Caracal has large ears.	
10. Polar bear hibernates in winter season.	



First

Fennec fox

Its Habitat: fennec fox lives in hot desert.

Way of adaptation	Reasons of adaptation	Type of adaptation
1. Fennec fox has extra- large ears. G.R.	■ To cool its body's temperature.	Structural Adaptation
2. Fennec fox has special type of ears (pointy ears). G.R.	■ to hear its distant prey to hunt it.	
3. Fennec fox has a tan-colored fur. G.R.	■ To blend in with desert's sand (camouflage) to catch its prey. ■ To reflect heat and protect itself from shot sun.	
4. Fennec fox depends on panting (like dog, 700 breath per minute) G.R.	To cool down its body.	Behavioral Adaptation
5. It hides in burrows during sunny time at day. G.R.	To cool its body.	
6. It eats different kinds of food G.R. As: (insects, fruits, plant roots, and other animal's leftovers).	Due to lack of food.	



Secon

Arctic fox

Its Habitat: Arctic fox lives in tundra (polar habitat where temperature reaches 50°C below zero.

Way of adaptation	Reasons of adaptation	Type of adaptation
1. It has thick fur coat. G.R.	■ To keep its body warm.	Structural Adaptation
2. Its fur coat is white in winter, and when snow melt in summer it turns into brown. G.R.	■ To sneak up on its prey in any season.	
3. Arctic fox has short ears and short legs. G.R.	■ To keep its body warm.	
4. Arctic fox has special type of ears (pointy ears). G.R.	■ To hear its distant prey and hunt it.	Behavioral Adaptation
5. It lives in burrows. G.R.	■ To stay warm at night.	
6. It eats different kinds of food. As: (insects, fruits, plant roots, animal's leftovers).	■ Due to lack of food.	



Fennec Fox	Arctic Fox
	
- It lives in hot dry desert. (Hot climate)	- It lives in tundra desert. (Cold climate)
- It has large ears that helps it cool its body.	- It has small ears that keep its body warm.
- It has a tan-colored thick fur to blend in with desert to sneak up on its prey.	- It has a white thick fur in winter and brown fur in summer to sneak up on its prey.
<ul style="list-style-type: none"> Both foxes have strong sense of hearing. Both foxes live in burrows. Both foxes feed on different types of food. 	

Choose ?

1. Fennec fox has ears.

- ☐ A Short ☐ B Large ☐ C Small ☐ D Tiny

2. Fennec fox has thick fur.

- ☐ A White ☐ B Black ☐ C Gray ☐ D Golden

3. Arctic fox has ears.

- ☐ A Long ☐ B Small ☐ C Large ☐ D Big

4. Arctic fox has thick fur in winter.

- ☐ A Yellow ☐ B White ☐ C Black ☐ D Golden

5. Color of arctic fox fur helps it to blend in tundra's in winter.

- ☐ A Sand ☐ B Rainbow ☐ C Rocks ☐ D Snow

6. Arctic fox has short and small ears to hear its prey and to keep it

Give reason for....

1. Arctic fox has small ears, but fennec fox has large ears.

.....

2. Arctic fox's fur color turns into brown when snow melts.

**Complete ?**

1. fox depends on panting to keep its body temperature low.
2. Fennec fox has Ears, but arctic fox has ears.
3. fox has a white fur, but fox has a tan colored fur.
4. fox lives in dry desert, but Fox lives in tundra's desert.
5. Both arctic fox and fennec fox has fur.
6. fox has thick fur to keep it warm in tundra's weather.

Write the scientific term ?

1. A fox whose fur color changes between winter and summer. (.....)
2. Places where arctic fox stays at night. (.....)
3. A technique helps dogs and fennec fox to cool their body. (.....)
4. A change in the structure of living organism's body to adapt in its environment. (.....)
5. A change in the behavior or act of the living organism to adapt in its environment. (.....)

Put (✓) or (×) ?

1. The ears of fennec fox are smaller than that of arctic fox. ()
2. Arctic fox depends on panting to cool its body. ()
3. Arctic fox's fur color turns into white, when snow melts. ()
4. Arctic fox has thick fur to keep its body warm. ()
5. Arctic fox lives in hot desert, but fennec fox lives in tundra. ()
6. Both arctic fox and fennec fox eat different types of food. ()
7. Arctic fox lives in burrows to keep its body warm at night. ()
8. Fennec fox hides in burrows to keep its body warm during the day. ()
9. Fennec fox has a tan-colored fur. ()

Match from column (B) what suits it in column (A) ?

(A)	(B)
1. Panting	a. Helps fennec fox to protect it from the sun.
2. small ears	b. helps fennec fox to cool its body.
3. tan-colored fur	c. helps arctic fox to stay warm.

1.

2.

3.

4.

Third Bull Shark

Its Habitat: it lives in **salt** water and **fresh** water.

- Other sharks live only in salt water.



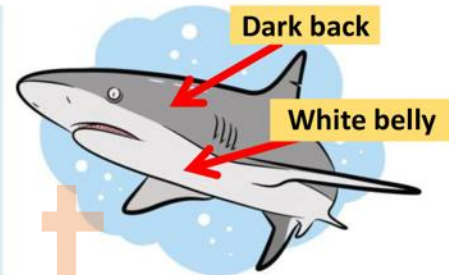
Way of adaptation in bull shark	Reasons of adaptation	Type of adaptation
1. Bull shark can live in fresh water. G.R.	■ As its body is adapted to live in fresh water.	Structural Adaptation
2. Bull shark has sharp teeth. G.R.	■ To tear its prey's flesh.	
3. Bull shark has a dark back and a white belly. (countershading) G.R.	■ To sneak up on its prey by using camouflage strategy.	
4. Bull shark hunts in different places as fresh and salt water. G.R.	■ To feed on different kinds of food. ■ To overcome the lack of food. (Less competition on food in fresh water)	Behavioral Adaptation
5. Bull shark hunts during day and at night. G.R.	■ To be hard for the prey to predict its next attack.	

Countershading:

It's a strategy of camouflage in which the animal's color is darker on top, and lighter on the belly.

- **Bull shark sneak up on its prey using countershading as a camouflage where:**

1. An animal swimming above can't see it due to its dark back.
2. The animal swimming underneath the bull shark as bull shark's white belly blends with the bright sunlight.



Choose ?

1. Bull shark uses as a method of camouflage to hide from its prey.

☐ A Echolocation ☐ B Mimicry ☐ C Migration ☐ D Countershading

2. Bull shark can live in

☐ A Fresh water ☐ B Salt water ☐ C Forest habitat ☐ D A and B

3. has/have darker color on top and lighter color on the underbelly.

☐ A Penguin ☐ B Bull shark ☐ C Polar bear ☐ D A and B



Put (✓) or (×), then correct the wrong one ?

1. Bull shark can only live in salt water. ()
2. Bull shark has lighter color on its back and darker color on its underbelly. ()
3. Countershading strategy in bull shark is a structural adaptation. ()
4. Bull shark hunts only during day. ()
5. All kinds of sharks can live in fresh water. ()
6. When a bull shark moves to a river, it will not survive. ()

Complete ?

1. Bull shark lives in water and water.
2. Bull shark uses strategy as a camouflage to sneak out from its
3. Countershading strategy in bull shark is a adaptation.
4. Bull shark's color is on top, and on the underbelly.
5. Bull shark's hunting during day and night is a adaptation.

Give reason for.... ?

1. Bull shark's body is different from other sharks.
.....
2. Bull shark has dark back and white belly.
.....
3. Bull shark hunts during day and at night.
.....
4. Bull shark can eat many kinds of food and hunt in different environments.
.....
5. Bull shark has less competitors in fresh water than in salt water.
.....

Write the scientific term ?

1. A feature in bull shark, where its back color is darker than its lower surface. (.....)

What will happen if ?

1. Bull shark's belly has a dark color like its back.
.....

Forth

Panther chameleon

- Lizards are types of reptiles.
- Bodies of reptiles are covered with scales.
- **Examples of lizards:**

**Starred agama lizard**

Its habitat: Hot desert

**Panther chameleon**

Its habitat: tropical rainforests

Panther chameleon:

Ways of adaptation in panther chameleon	Reasons of adaptation	Type of adaptation
1. It has brightly colored scales. G.R.	▪ To blend in with surrounding environment which has green leaves and colorful flowers.	Structural Adaptation
2. It has a cone-shaped camera eyes, that can move independently at opposite directions G.R.	▪ As one eye searches for insects to eat, and another eye lookout for predators.	
3. It has a long sticky tongue. G.R.	▪ To catch insects.	
4. It has a V-shaped foot. G.R.	▪ To hold tightly tree branches	
5. It has a long and hand-like tail. G.R.	▪ To hold tightly tree branches	
6. In case of danger: a. It changes its scales colors. G.R. b. It puffs up its body with air. G.R. c. It opens its mouth widely. G.R.	To frighten its enemies.	Behavioral Adaptation

Write the scientific term ?

1. A reptile that lives in tropical rainforests. (.....)
2. A lizard that has colored scales and a V-shaped feet. (.....)
3. A long sticky organ that helps panther chameleon to catch insects. (.....)



Choose ?

1. Panther chameleon has colored to change its color.

- ☐ A Scales ☐ B Fur ☐ C Feathers ☐ D Hair

2. Panther chameleon is one of the

- ☐ A Mammals ☐ B Reptiles ☐ C Amphibians ☐ D Birds

3. Panther chameleon lives in

- ☐ A North pole ☐ B South pole ☐ C Ocean ☐ D Tropical forests

4. Panther chameleon has a feet.

- ☐ A H-shaped ☐ B V-shaped ☐ C L-shaped ☐ D F-shaped

5. When a panther chameleon stands on a green leaf, its color changes into

- ☐ A Yellow ☐ B Brown ☐ C Green ☐ D Black

6. Starred agama lizard lives in

- ☐ A Tropical forest ☐ B Hot desert ☐ C Polar region ☐ D Arctic region

Put (✓) or (×), then correct the wrong one ?

- Panther chameleon's ability of puffing body is a structural adaptation. ()
- Panther Chameleon is a reptile that lives in tropical habitat. ()
- Panther Chameleon's V-shaped feet is a structural adaptation. ()
- Panther Chameleon's ability to change its color is a structural adaptation. ()
- Panther chameleon has colored scales. ()
- Panther Chameleon's eyes can move only at one direction. ()
- Panther Chameleon has a tail like hand. ()
- Panther Chameleon has a H-shaped foot. ()
- Panther Chameleon's long tail is a structural adaptation. ()
- starred agama lizard lives in hot dry desert. ()

Complete ?

- Panther Chameleon has colored to change its color.
- Panther Chameleon lives in
- Panther Chameleon has a tail and a Foot.

4th Primary, 1st term



- Panther Chameleon's ability to change its color is a adaptation.
- Panther Chameleon's eyes can move independently at two opposite directions is a adaptation.
- Panther Chameleon's V-shaped foot is a adaptation.
- When a Panther chameleon stands on a green leaf, its color changes into
- Panther Chameleon has a sticky long to catch

Give reason for....



- Panther Chameleon has colored and shiny scales.
.....
- Panther Chameleon can inflate its body with air and open its mouth widely.
.....
- Panther Chameleon has a V-shaped foot.
.....
- Panther Chameleon has a long tail.
.....
- Panther Chameleon's eyes can move independently at two opposite directions.
.....

What happens if



- Chameleon couldn't change its color.
.....
- Chameleon's eyes were like the human's eyes.
.....
- Panther chameleon is exposed to danger.
.....

Match from column (B) what suits it in column (A)



(A)	(B)
1. Panther chameleon	a. Lives in forests and has a dark fur.
2. Bull shark	b. Has weave blood vessels in its feet.
3. Brown bear	c. Lives in tropical forest and has V-shaped feet.
4. Penguin	d. Lives in fresh and salt water.

1.

2.

3.

4.



Lesson

Adaptation in plants

- Plants like animals, they have structural adaptation in their (roots, trunk, leaves) and behavioral adaptation.... To can survive in its environment.
- What happens if:
 - A plant is taken from its original habitat to another one.
It may adapt with the surrounding conditions or it will die.

Where do these plants grow...? ?

(Desert – tropical forests – wetland – polar region)

1. Water lily



Grows in

2. cactus



Grows in

3. Pine trees



Grows in

4. Tall trees



Grows in

Two terrific trees

Acacia Tree



(An umbrella-shaped tree)

- It grows in Savanna Forest, in south Africa.

Characteristics of Savanna Forests:

- It is a grassland habitat, where the temperature is moderate (mild)
- It has drought conditions, (An extreme lack of water). .it may last for half of a year , so most large plants can't grow.

Kapok Tree



(An umbrella-shaped tree)

- It grows in Amazon rainforest, in Brazil.

Characteristics of Rainforests:

- It is rainy most of the year.
- Trees of rainforest grow up to 70 meters tall: G.R.
 - To reach sunlight.
 - To not be broken by strong wind.



Acacia tree

Its habitat:

- It grows in **Savanna Forest**, in south Africa.



Structural adaptation

1. Roots:

It has very long (Taproot) that grows deep downwards to 35 meters below the surface.
G.R. To search for water.

2. Trunk:

- It has very long trunk. **G.R.**
 To prevent animals from reaching its leaves except Giraffe.
- It stores water in its trunk (as camel stores fat in its hump). **G.R.**
 Due to lack of water.

3. leaves:

- It has tiny oval leaves on its top. **G.R.**
 To hold water and absorb sunlight needed to make its food.
- Its leaves have sharp spines. **G.R.**
 To not be eaten by animals.



Behavioral adaptation

- It produces a poison to make its leaves taste bad. **G.R.**
 To protect itself from herbivores.
- It sends a smelly message in wind to other near acacia trees to alert them to produce poison.
 To protect itself from herbivores.

Kapok tree

Its habitat:

- It grows in **Amazon rainforest**, on Atlantic Ocean coast in Brazil.



Structural adaptation

1. Roots:

- It has large and wide (buttress roots). **G.R.**
 To make its roots steady and firm.



- Its roots don't grow deeply, but they grow high up on its trunk (5 meters above the ground) **G.R.**
 To firm its root in the soggy soil.

2. leaves:

- It has hand-shaped leaves with narrow parts. **G.R.**
 to let wind pass through leaves without tearing leaves.



Behavioral adaptation

- It uses wind to send different kinds of messages than acacia tree. **G.R.**
 To invite bats to visit their delicious smelling flower.
 its fluffy yellow seeds are spread by wind and bats in the forest.





Plant	Its habitat	Its structural adaptation
 Mangrove tree	Salt water	<ul style="list-style-type: none"> It has long and strong roots. G.R. To resist the waves.
 Water lily	Wetland	<ul style="list-style-type: none"> It has wide leaves that float on water surface. G.R. To absorb a big amount of sunlight.
 Palm tree	Desert	<ul style="list-style-type: none"> It has thick roots and small leaves. G.R. To resist strong and stormy winds.
 Barbary fig	Desert	<ul style="list-style-type: none"> It has sharp spines. G.R. To prevent animals from eating it.
 Pine tree	Snow (Polar habitat)	<ul style="list-style-type: none"> It has a triangle shape and short branches. G.R. To let snow slide down, so its branches don't break. It has needle leaves. G.R. To prevent it from losing water.
 Acacia tree	Savannah Forest	<ul style="list-style-type: none"> Its branches grow and gather on the top of its trunk. G.R. To prevent animals reaching them.



Choose ?

1. is the animal that can eat leaves of acacia tree.

- ☐ A Fennec fox ☐ B Giraffe ☐ C Caracal ☐ D Penguin

2. and chameleon live in the same habitat.

- ☐ A Acacia tree ☐ B Palm tree ☐ C Kapok ☐ D Pine tree

3. Both of bull shark and can live in salt water.

- ☐ A Water lily ☐ B Mangrove tree ☐ C Pine tree ☐ D Palm tree

4. All of these are adapted to live in hot desert except

- ☐ A Caracal ☐ B Palm tree ☐ C Kapok tree ☐ D Barbary fig

5. All of these from characteristics of pine tree except

- ☐ A Needle leaves ☐ B Short branches ☐ C Triangle shape ☐ D Wide leaves

6. has wide leaves to absorb sunlight.

- ☐ A Palm tree ☐ B Pine tree ☐ C Barbary fig ☐ D Water lily

7. Both barbary fig and have sharp spines to keep animals away.

- ☐ A Kapok tree ☐ B Acacia tree ☐ C Mangrove tree ☐ D Water lily

8. Tree has a triangle shape.

- ☐ A Acacia tree ☐ B Palm tree ☐ C Kapok tree ☐ D Pine tree

9. has hand-shaped leaves to let wind pass through them.

- ☐ A Water lily ☐ B Mangrove tree ☐ C Pine tree ☐ D Palm tree

10. Roots of tree are strong and long to resist waves.

- ☐ A Acacia tree ☐ B Palm tree ☐ C Kapok tree ☐ D Mangrove tree

11. Desert plants are characterized by all the following except

- ☐ A Long roots ☐ B Sharp spines ☐ C Store water ☐ D Wide leaves

12. Depends on wind to send a message to bats to visit its flowers.

- ☐ A Palm tree ☐ B Acacia tree ☐ C Kapok tree ☐ D Water lily

13. Kapok tree has fluffy seeds.

- ☐ A White ☐ B Yellow ☐ C Red ☐ D Pink



14. Both barbery fig and acacia tree keep animal trees away by its

- ☐ A Delicious flowers ☐ B Poison ☐ C Sharp spines ☐ D Wide leaves

15. All of these are adapted to face extreme cold climate except

- ☐ A Arctic fox ☐ B Penguin ☐ C Acacia tree ☐ D Pine tree

16. Both acacia tree and are umbrella-shaped tree.

- ☐ A Mangrove tree ☐ B Water lily ☐ C Kapok tree ☐ D Pine tree

17. has buttress roots.

- ☐ A Water lily ☐ B Mangrove tree ☐ C Acacia tree ☐ D Kapok tree

18. Roots of tree grow less deeply in soil than acacia tree.

- ☐ A Barbary fig ☐ B Palm tree ☐ C Kapok tree ☐ D Mangrove tree

12. grows in fresh water.

- ☐ A Mangrove tree ☐ B Acacia tree ☐ C Barbary fig ☐ D Water lily

13. The scent of kapok tree's flowers attracts

- ☐ A Giraffe ☐ B Brown bear ☐ C Bats ☐ D Dark bear

14. Acacia tree stores water in its

- ☐ A Root ☐ B Trunk ☐ C Seeds ☐ D Leaves

15. All of these are adapted to survive in extreme cold climate except

- ☐ A Arctic fox ☐ B Pine tree ☐ C Penguin ☐ D Kapok tree

16. All of these are adapted to survive in hot dry desert except

- ☐ A Palm tree ☐ B Cactus plant ☐ C Mangrove tree ☐ D Barbary fig

17. Grows in savannah forests.

- ☐ A Kapok tree ☐ B Pine tree ☐ C Mangrove tree ☐ D Acacia tree

18. Panther chameleon may stand on the leaves or branches of the

- ☐ A Kapok tree ☐ B Pine tree ☐ C palm tree ☐ D Barbary fig

19. Structural adaptation of roots of Helps it to resist waves.

- ☐ A Kapok tree ☐ B Mangrove tree ☐ C palm tree ☐ D Barbary fig

20. All of these are adapted to survive in habitat that have lack of water except

- ☐ A acacia tree ☐ B Water lily ☐ C palm tree ☐ D Barbary fig

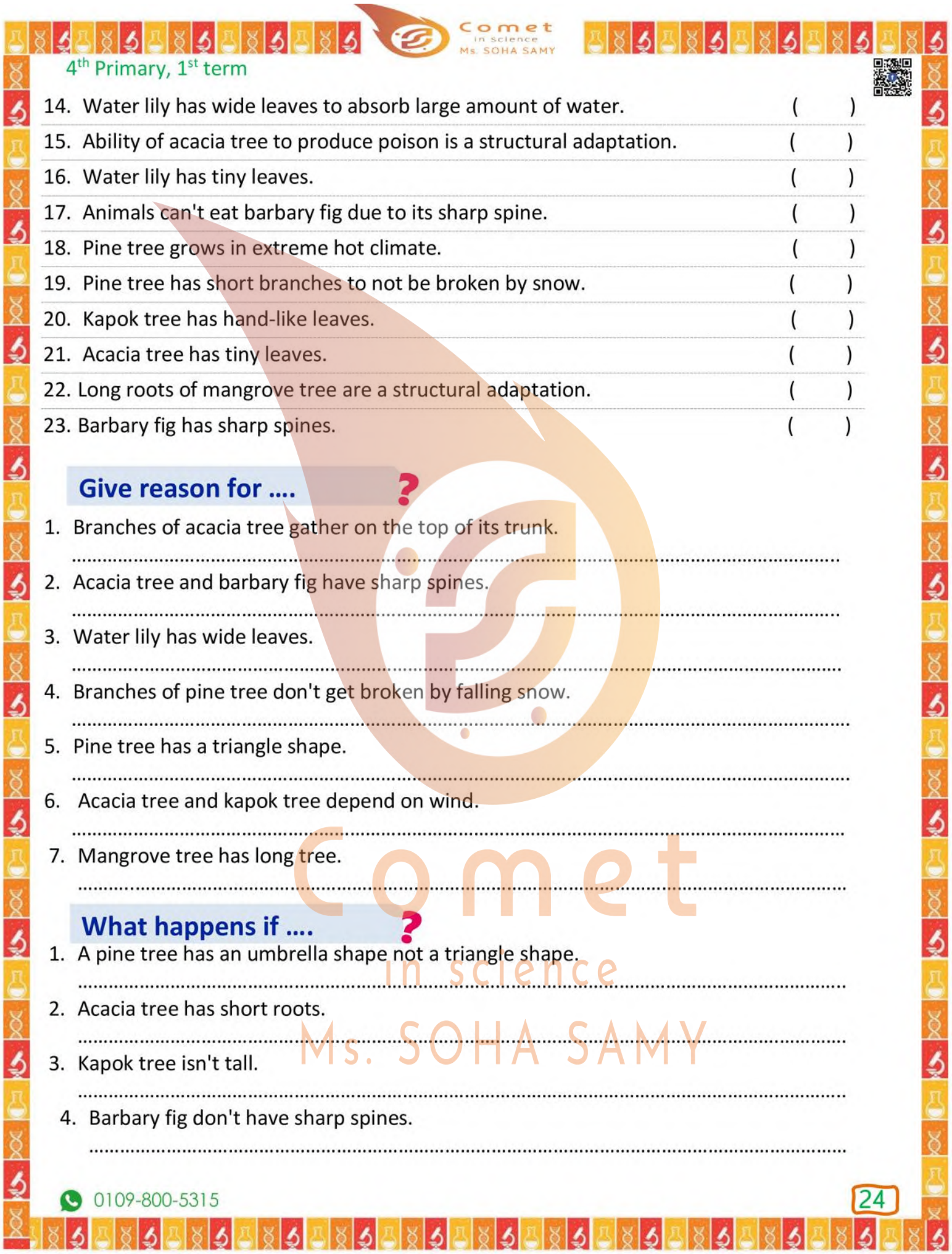


Write the scientific term ...?

1. An umbrella-shaped tree adapted to live in rainforest habitat. (.....)
2. An umbrella-shaped tree adapted to live in savannah forests. (.....)
3. A tree that has a long taproot to search for water in savannah forest's soil. (.....)
4. A substance produced by acacia tree to prevent animals from eating its leaves. (.....)
5. Both acacia tree and kapok tree use it to send a message through. (.....)
6. A plant lives in wetland habitat and has wide leaves. (.....)
7. A tree that can survive in salt water. (.....)
8. A structural adaptation in desert plants which prevent animals from eating them. (.....)
9. The part of acacia tree in which water is stored. (.....)
10. They gather at the top of acacia tree's trunk. (.....)
11. A triangle shaped tree lives in polar habitat. (.....)
12. A part of pine trees that prevent loss of water. (.....)
13. The habitat in which acacia tree lives. (.....)
14. The habitat in which kapok trees live. (.....)
15. The part of kapok tree that is supported by buttress tree. (.....)

Put (✓) or (×), then correct the wrong one ?

1. Plants have only structural adaptation. ()
2. Producing poison in acacia tree is from the behavioral adaptation. ()
3. It's hard for kapok tree to get water. ()
4. It's easy for rainforest plants to get sunlight. ()
5. Acacia tree stores water in its roots. ()
6. Kapok tree has short trunk to get more sunlight. ()
7. Acacia tree and kapok tree use wind to send a message. ()
8. Water lily and mangrove tree can grow in salt water. ()
9. Pine tree has needle-shaped leaves to prevent loss of water. ()
10. Acacia tree has a buttress root, but kapok tree has a taproot. ()
11. Leaves of acacia tree are smaller than that of kapok tree. ()
12. Kapok tree's root grows deeper than the acacia tree root. ()
13. Kapok tree and acacia tree have sharp spines to keep animals away. ()



4th Primary, 1st term



- | | |
|--|---------|
| 14. Water lily has wide leaves to absorb large amount of water. | () |
| 15. Ability of acacia tree to produce poison is a structural adaptation. | () |
| 16. Water lily has tiny leaves. | () |
| 17. Animals can't eat barbary fig due to its sharp spine. | () |
| 18. Pine tree grows in extreme hot climate. | () |
| 19. Pine tree has short branches to not be broken by snow. | () |
| 20. Kapok tree has hand-like leaves. | () |
| 21. Acacia tree has tiny leaves. | () |
| 22. Long roots of mangrove tree are a structural adaptation. | () |
| 23. Barbary fig has sharp spines. | () |

Give reason for ?

1. Branches of acacia tree gather on the top of its trunk.
.....
2. Acacia tree and barbary fig have sharp spines.
.....
3. Water lily has wide leaves.
.....
4. Branches of pine tree don't get broken by falling snow.
.....
5. Pine tree has a triangle shape.
.....
6. Acacia tree and kapok tree depend on wind.
.....
7. Mangrove tree has long tree.
.....

What happens if ?

1. A pine tree has an umbrella shape not a triangle shape.
.....
2. Acacia tree has short roots.
.....
3. Kapok tree isn't tall.
.....
4. Barbary fig don't have sharp spines.
.....

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Match from column (B) what suits it in column (A)

(A)	(B)
1. Pine tree	a. Has hand-like leaves.
2. Kapok tree	b. Has needle-shaped leaves.
3. Acacia tree	c. Lives in salt water.
4. Mangrove tree	d. Has tiny leaves.

1. 2. 3. 4.

Match from column (B) what suits it in column (A)

1. Water lily	e. Lives in savannah forests.
2. Kapok tree	f. Lives in the polar habitat.
3. Acacia tree	g. Lives in wetland habitat.
4. Pine tree	h. Lives in tropical rainforests.

1. 2. 3. 4.

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Lesson 4

Digestive system

- Living organisms body systems are adapted to meet their needs.
- The body of living organism consists of some **systems**, and each system consist of a group of **organs**.



A system:

A group of organs that work together to do a specific function.

Give reason for ?

- Systems of the body are different in their structure G.R.**
To do a specific function and get its need of (food and breathing).

- Digestive system and respiratory system are examples of systems that work together to get energy from food and breathing.**



Why the body of living organism need energy? ?

- To do activities, as (walking, sleeping or talking)
- To do functions inside the body as (heart beating, breathing or thinking)

NOTE

In one day:

You need a lot of energy, your heart beats about 100,000 times, you take over 20,000 breaths, and thousands of steps.


First

Human digestive system

- Food is digested and broken down into smaller pieces that our body can use. **G.R.**

To get nutrients from it.

, **SO** food passes through different organs of digestive system to be changed into smaller pieces.

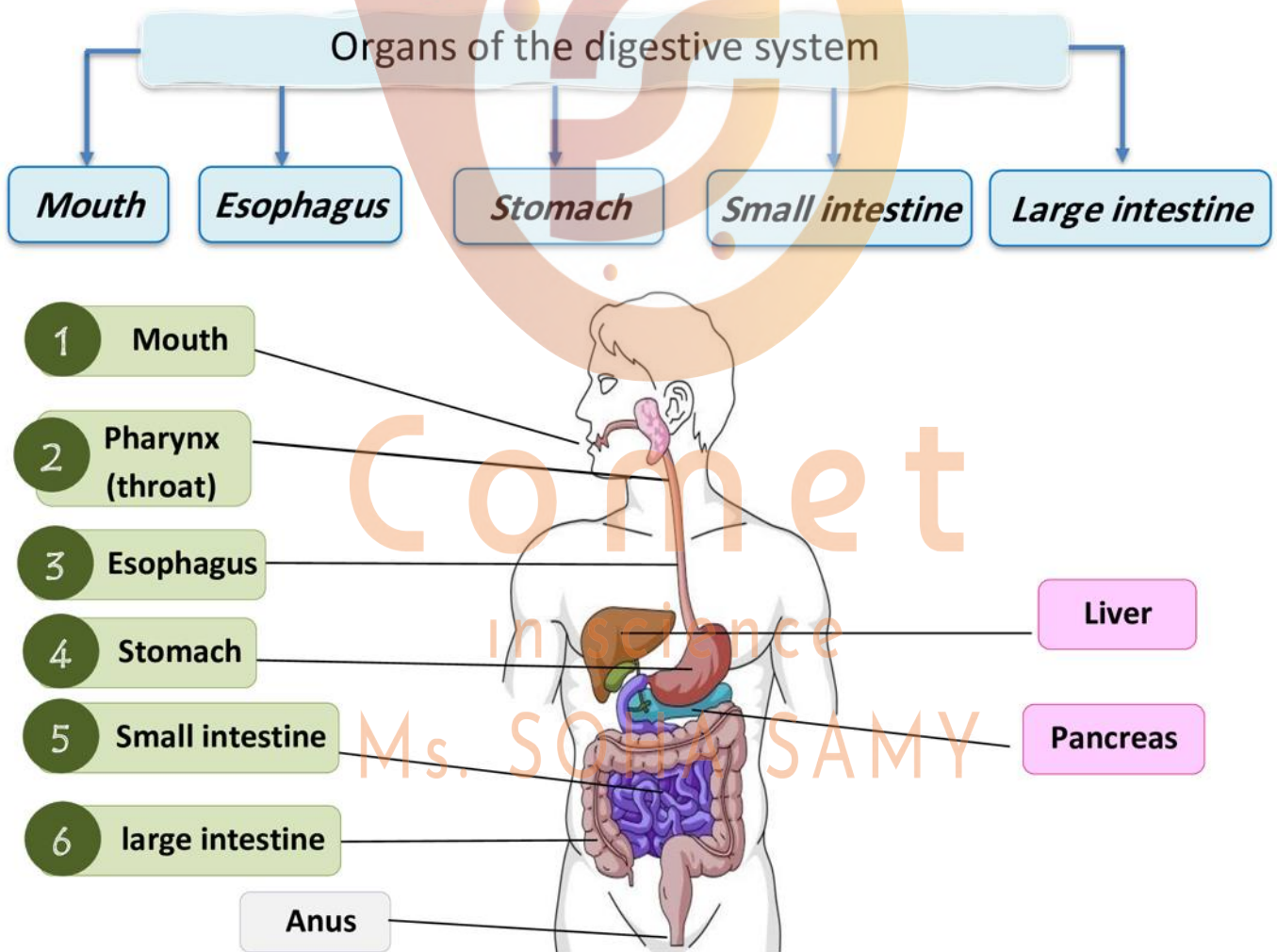
Digestive system:

The system that breaks down food into small pieces to let body cells get energy from them.

Digestion Process:

It is the process of breaking down food into chemical substances that are absorbed and used by the body to get energy .

The structure of the digestive system:





- Digestive system starts with **Mouth** and ends with **Anus**.
- Organs of the digestive system are connected to let food complete the digestion process.
- Food journey in digestive system starts from **mouth**, and ends with the excretion stage by **anus**.

1 Mouth:

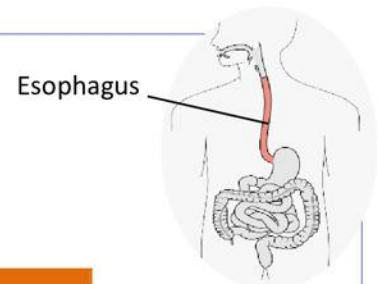
- Digestion process starts in mouth.
- Mouth contains:
1. **Teeth.** 2. **Saliva.** 3. **Tongue.**



	Function
Teeth	▪ Chewing food by breaking down and crushing it.
Saliva	▪ A liquid found in mouth that changes starch into sugar. ▪ Soften food to be easily swallowed.
Tongue	▪ It mixes food with saliva.

2 Esophagus:

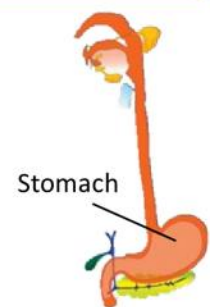
- During swallowing food pharynx(throat) muscles push food into a tube called **esophagus**.
Esophagus: is a muscular tube that let food pass to stomach.



	Function
Esophagus	It pushes food down to stomach.

3 Stomach:

- **Stomach: is a muscular organ.**
- Stomach secretes **stomach acid** and **digestive juices** (enzymes).
- Stomach muscles mixes food with the acid and the enzymes to change food into a **soupy liquid**.
- Food stays in stomach for a few hours, then the stomach muscles move the food into a long winding tube called "small intestine".



Mouth

Esophagus

Stomach

Small intestine

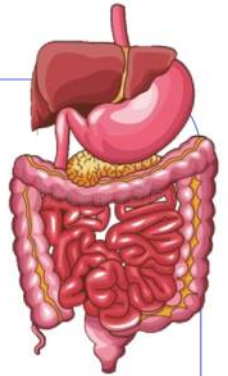
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4 Small intestine:

- It is a long winding tube.
- Its length is more than 6 meters.
- **Its role in digestion process:**
 1. Food is broken down into nutrients in small intestine by the effect of juices of **liver** and **pancreas**.
 2. Nutrients are absorbed by the wall of small intestine moving into tiny blood vessels, till they reach the blood.
 3. Blood carries the nutrients to all body parts.



Small intestine

Nutrients
Are absorbed



Blood vessels

Carried by blood



All body parts

Undigested materials:

They are some food parts that body don't get benefit from, and they flow into large intestine.

5 Large intestine:

- It is a tube that starts from the end of the **small intestine** and ends with the **anus**.
- **Its function:**
 - It absorbs water from undigested materials, so they become solid wastes that come out through anus.



What happens if: an organ is removed from the digestive system ?

- It can't perform its function properly.

How can you keep your digestive system healthy ?

1. Chew the food well.
2. Don't eat much fast food.
3. Drink a lot amount of water.
4. Practice sports regularly.



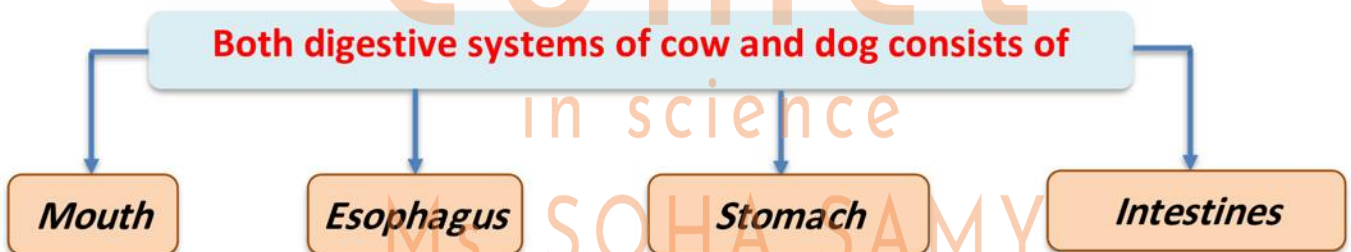
	Function
Mouth	<ul style="list-style-type: none"> ▪ Teeth: chewing food. ▪ Saliva: softens food to be easily swallowed and changes starch into sugar. ▪ Tongue: mixes food with saliva.
Esophagus (Muscular tube)	<ul style="list-style-type: none"> ▪ Pushes food to stomach.
Stomach (Muscular organ)	<ul style="list-style-type: none"> ▪ It has acid and enzymes that changes food into a soupy liquid.
Small intestine	<ul style="list-style-type: none"> ▪ Complete digestion of food by juices of liver and pancreas. ▪ Digested food (nutrients) is absorbed and moved to blood that carries it to all body parts.
Large intestine	<ul style="list-style-type: none"> ▪ It absorbs water from undigested food. ▪ Getting rid of solid materials through anus.

What's the function of the digestive system ?

1. Getting nutrients and from food by digestion process.
2. Absorption of digested food to get needed energy.

Are the digestive systems of cow and dog are similar to the human digestive system ?

They are similar in	They are different in
Each of them starts with mouth and ends with anus.	The structure of the digestive system. G.R. They have structural adaptation to digest different types of food.





Choose ?

1. The digestion process begins in the

- ☐ A Esophagus ☐ B Mouth ☐ C Stomach ☐ D Throat

2. All of these from the digestive system's organs except

- ☐ A Mouth ☐ B Stomach ☐ C Mouth ☐ D Nose

3. follows throat (pharynx) in the digestive system.

- ☐ A Mouth ☐ B Small intestine ☐ C Esophagus ☐ D stomach

4. In the digestive system, Precedes the small intestine.

- ☐ A Esophagus ☐ B Large intestine ☐ C Stomach ☐ D Anus

5. Digestive system ends with the

- ☐ A Small intestine ☐ B Mouth ☐ C Anus ☐ D Stomach

6. All of these exist in the mouth except

- ☐ A Teeth ☐ B Saliva ☐ C Acid ☐ D Tongue

7. Crushing and breaking down food inside the mouth is the role of

- ☐ A Saliva ☐ B Teeth ☐ C Tongue ☐ D Stomach

8. In mouth, Moistens (softens) the food to be easily swallowed.

- ☐ A Teeth ☐ B Tongue ☐ C Throat ☐ D Saliva

9. is a liquid in mouth that converts starch into sugar.

- ☐ A Water ☐ B Oil ☐ C Saliva ☐ D Honey

10. Starch is changed into by saliva.

- ☐ A Protein ☐ B Fats ☐ C Oil ☐ D Sugar

11. Food is softened and mushed by saliva and

- ☐ A Teeth ☐ B Tongue ☐ C Throat ☐ D A and B

12. Food passes from throat to

- ☐ A Stomach ☐ B Esophagus ☐ C Small intestine ☐ D Mouth

13. In stomach, digestion of food occurs by the help of

- ☐ A Enzymes ☐ B Stomach acid ☐ C Saliva ☐ D A and B



14. Complete digestion of food occurs in the

- ☐ A Stomach ☐ B Small intestine ☐ C Large intestine ☐ D Anus

15. Absorption of digested food (nutrients) occurs in the

- ☐ A Large intestine ☐ B Stomach ☐ C Esophagus ☐ D Small intestine

16. is the longest organ in the digestive system of 6-meters length.

- ☐ A Large intestine ☐ B Small intestine ☐ C Stomach ☐ D Esophagus

17. Nutrients is absorbed from small intestine and moved to the In blood vessels.

- ☐ A Large intestine ☐ B Blood ☐ C Lungs ☐ D Anus

18. Is a tube starts with the end of the small intestine.

- ☐ A Small intestine ☐ B Stomach ☐ C Small intestine ☐ D Large intestine

19. Undigested food passes from small intestine to

- ☐ A Blood ☐ B Stomach ☐ C Anus ☐ D Large intestine

20. In large intestine, is absorbed from the undigested food.

- ☐ A Nutrients ☐ B Water ☐ C Fats ☐ D Blood

21. Undigested food is expelled outside the body through

- ☐ A Small intestine ☐ B Mouth ☐ C Anus ☐ D Stomach

Write the scientific term ...?

1. It's a group of organs that work together to do a specific function. (.....)
2. The system that breaks down food to let the body get energy from it. (.....)
3. The process of breaking down food into small pieces to get nutrients from them. (.....)
4. The organ in which digestion of food starts. (.....)
5. A liquid exists in the mouth and moistens food to be easily swallowed. (.....)
6. An organ that contains teeth, tongue and saliva. (.....)
7. The type of food that is digested in the mouth. (.....)
8. A liquid in mouth that changes starch into sugar. (.....)
9. The organ that follows the throat in the digestive system. (.....)
10. The organ in mouth that mixes food with saliva. (.....)
11. The organ in which saliva is secreted. (.....)

4th Primary, 1st term



12. The organ that crushes and breaks down food in mouth. (.....)
13. A six-meter winding muscular tube that extends from the end of the stomach. (.....)
11. A muscular tube in which food passes to the stomach. (.....)
12. The liquid substances that digest food in the stomach. (.....)
13. The organ that receives food from the stomach. (.....)
14. The final form to which food in stomach is changed into. (.....)
15. The organ in which liver and pancreas secrete their juices. (.....)
16. The process of transfer of nutrients from the small intestine to blood. (.....)
17. The organ in which complete digestion of food occurs. (.....)
18. The organ in which absorption of digested food occurs. (.....)
19. The organ that receives undigested food from the small intestine. (.....)
20. The abstracted material from the undigested food in the large intestine. (.....)
21. The organ through which undigested food "solid wastes are ejected outside the body. (.....)

Put (√) or (×), then correct the wrong one ?

1. The organs of the digestive system don't work together. ()
2. All animals have the same shape and structure of the digestive system. ()
3. Our body gets energy from digestion of food and breathing. ()
4. The stomach lies between esophagus and small intestine. ()
5. The mouth contains teeth, tongue and stomach acid. ()
6. Saliva moistens food, and the tongue crushes food. ()
7. Saliva is solid substance exits in the mouth. ()
8. Starch is changed into proteins by saliva. ()
9. Starch is changed into sugar in the stomach. ()
10. Liver pours its juice in the large intestine. ()
11. Water is absorbed from undigested food in the large intestine. ()
12. The large intestine starts from the end of the stomach. ()
13. Undigested food is absorbed through the wall of the small intestine. ()
14. In human body, the large intestine is longer than the small intestine. ()
15. Food stays in the stomach for a few days till it is changed into a soupy liquid substance. ()

4th Primary, 1st term



16. Nutrients are resulted from breaking down food in the small intestine. ()
17. Complete digestion of food occurs by the help of juices of liver and pancreas. ()
18. The solid wastes leave the body through the anus. ()
19. Digestion process starts in the mouth. ()
20. The digestive system starts with mouth and ends with small intestine. ()
21. During swallowing food is pushed by pharynx to stomach. ()
22. Nutrients are absorbed in small intestine and inter tiny blood vessels. ()
23. Practice sport keep your digestive system unhealthy. ()
24. Eating much fast food keeps your digestive system healthy. ()
25. Drinking a lot amount of water keeps our digestive system healthy. ()

Give reason for ?

1. The human body consists of different systems.

.....

2. You must not eat much fast food.

.....

3. You must chew food well.

.....

What happens if ?

1. Small intestine is removed from the human body.

.....

2. Liver and pancreas don't pour their juices in the small intestine.

.....

3. Absorption of nutrients to inter tiny blood vessels.

.....

Match from column (B) what suits it in column (A) ?

(A)	(B)
1. Saliva	a. Undigested food leaves the body through it.
2. Anus	b. Changes food into a soupy liquid form.
3. Small intestine	c. Changes starch into sugar.
4. stomach	d. Food is completely digested in it.

1.

2.

3.

4.



Match from column (B) what suits it in column (A)

(A)	(B)
1. Mouth	a. A muscular tube that pushes food to esophagus.
2. Large intestine	b. Contains an acid and digestive juices.
3. Throat	c. Contains teeth, tongue and saliva.
4. Stomach	d. Extends from the end of the small intestine.

1.

2.

3.

4.

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Second

Human Respiratory system

Respiratory system:

It is the system responsible for breathing (respiration).

Respiration Process:

It is the process of entering air rich in oxygen into the body, and pushing air rich in carbon dioxide out of the body.

Function of the respiratory system:

1. It supplies the body with oxygen gas needed to burn food and get energy from it.
2. It gets rid of carbon dioxide gas.

The structure of respiratory system

The human respiratory system consists

Nose

Pharynx (throat)

Trachea

Two lungs

diaphragm

1

Nose

2

Pharynx (throat)

3

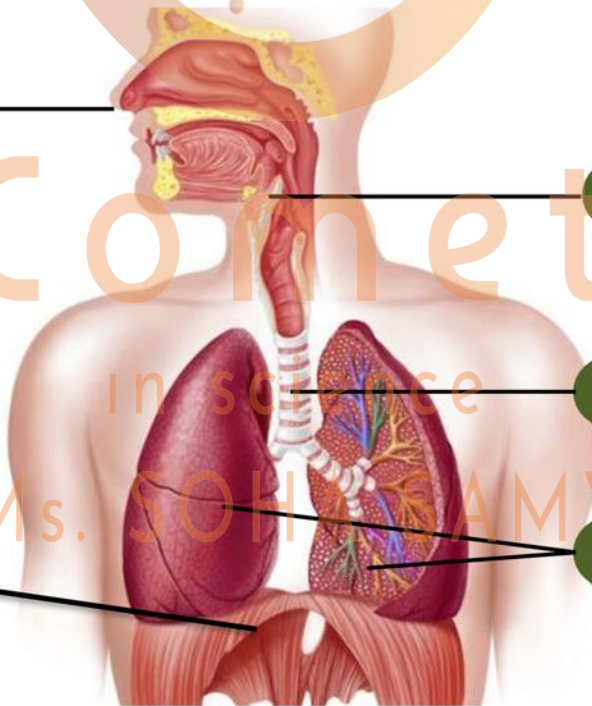
Trachea

4

Two lungs


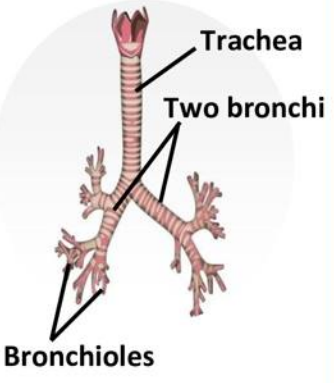
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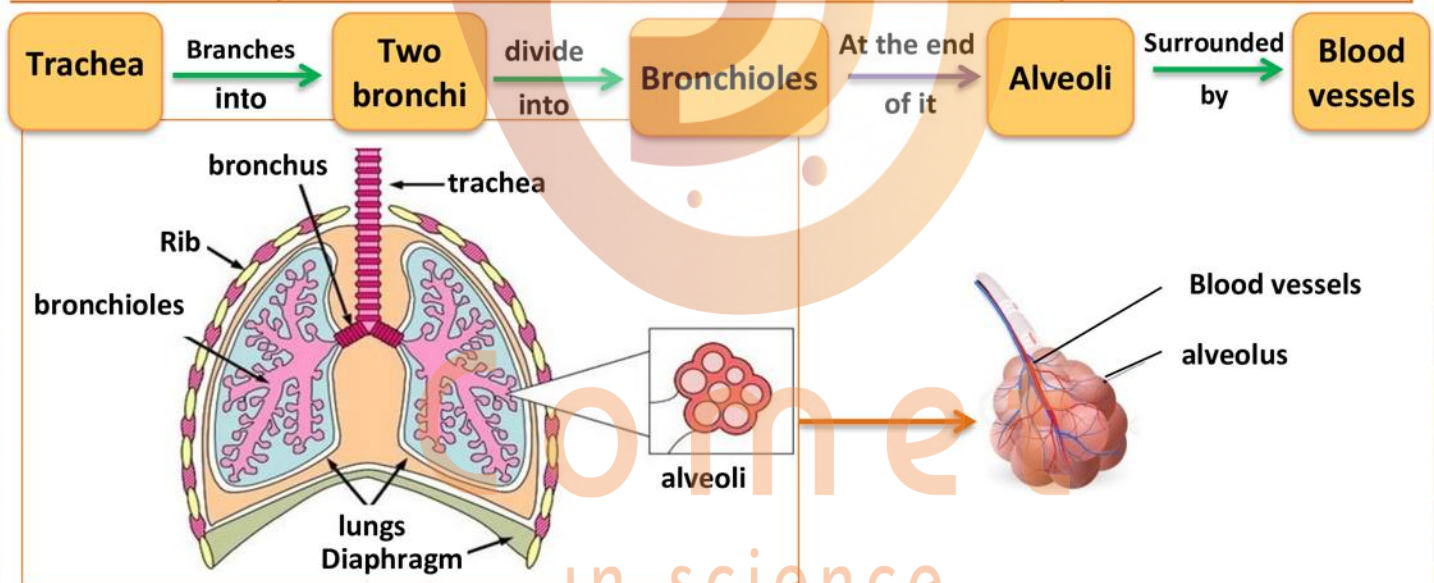
diaphragm



How does the respiratory system work



1 Nose	<ul style="list-style-type: none"> Air enters through nose and mouth then down the throat (pharynx). Inhalation process: entering air to the body by nose or mouth. 	
2 Trachea	<ul style="list-style-type: none"> It let air pass from throat into two lungs. (Two lungs are filled up with air like two balloons.) 	
3 Two lungs	<p>In each lung:</p> <ol style="list-style-type: none"> Air passes from trachea to two bronchi (tubes), then to bronchioles (smaller tubes as tree branches). <ul style="list-style-type: none"> Bronchioles ends with alveoli (air sacs). Alveoli is surrounded by blood vessels. Oxygen gas moves from alveoli to blood vessels, then to blood stream that carries it around the body. 	



- The more active your body is, the more your respiration times increases **G.R.**
To get more energy



During sitting, your breath slows down



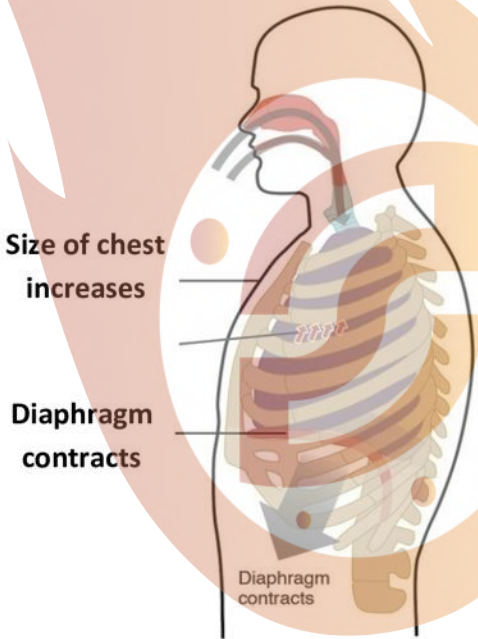
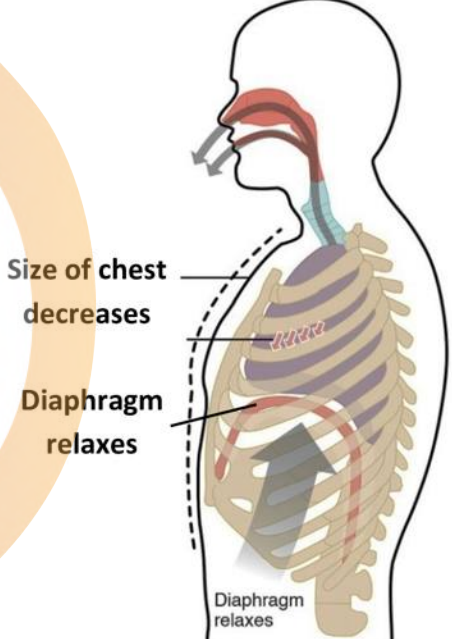
During running, your breath fastens

**NOTES**

1. Our body cells need oxygen to do their functions.
2. Our body can't store extra oxygen, so we must constantly take in new oxygen.

How does the respiration process take place...?

- Respiration process includes two processes:
 1. **Inhalation process (breathe in).**
 2. **Exhalation process (breathe out).**

P.O.C	Inhalation process	Exhalation process
Figure	 <p>Size of chest increases</p> <p>Diaphragm contracts</p> <p>Diaphragm contracts</p>	 <p>Size of chest decreases</p> <p>Diaphragm relaxes</p> <p>Diaphragm relaxes</p>
Definition	It is a process by which air rich in oxygen gas enters the lungs.	It is a process by which air rich in carbon dioxide gas is expelled outside the body.
Diaphragm muscle	It contracts (shrinks) and moves downward.	It relaxes (expands) and moves upward.
Size of chest	Increases or enlarges.	Decreases or becomes narrow
Type of air	air rich in oxygen gas enters the lungs.	air rich in carbon dioxide gas is expelled outside the body.

**NOTES**

- Carbon dioxide gas is a waste product, *So we must expel it out G.R.*
As it is a harmful gas to our body.

What happens if: We hold our breath for a long time. ?

- Our body can't do its vital processes as it needs oxygen.

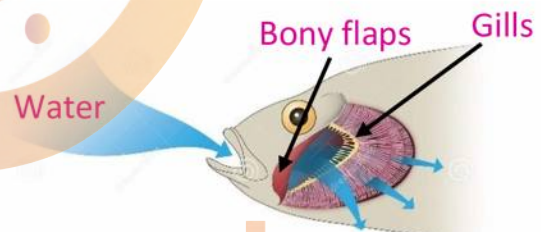
How can you keep your respiratory system healthy ?

- Breathing clear air.
- Eating fruits rich in vitamin (C) as Orange and guava *G.R.* to not get flu.
- Avoid smoking and smoking areas.

► **How fish breathe....** ?

- Fish use gills to take oxygen gas out of water and release carbon dioxide gas.
- Gills are found on the two sides of fish's head, under bony flaps that can open and close.
- Water enters the mouth of the fish and passes across the gills, then blood vessels carry oxygen gas to the rest of the body.

- Pollution affects the fish, so fish need clean water to survive.



P.O.C	Human respiratory system	Fish respiratory system
Similarities	Both: <ul style="list-style-type: none"> Inhale Oxygen gas. Exhale carbon dioxide gas. Blood carry oxygen to all body parts. 	
Differences	Human have lungs to inhale oxygen gas from air .	Fish have gills to inhale oxygen gas from water .



► What happens if... environments continue to change

Slow change	Rapid change (human activity)
<ul style="list-style-type: none"> Organisms have time to adapt over generations. 	<ul style="list-style-type: none"> It causes many organisms to : <ol style="list-style-type: none"> 1. Move. 2. Disappear. 3. Die or Extinct.

Extinction:

The living organism is no longer exist on Earth.

Causes of ecosystem change

Slow Natural changes	Rapid Changes due to human activities
<ol style="list-style-type: none"> 1. Change in temperature. 2. Amount of rainfall from seasons. 3. Severe weather changes as winds. 4. Wildfires and flood. (it causes increasing or decreasing the number of predators or prey) 	<ol style="list-style-type: none"> 1. Cutting down forests. 2. Plowing grasslands. 3. Adding new diseases, plants and animals in an ecosystem. 4. Air pollution by exhausts of cars and factories. 5. Water pollution by throwing wastes in it. 6. Soil pollution by watering it with polluted water.

► What are the Impacts of human activities (air, water and soil pollution) on animals, plants and humans

1 On animals	<ul style="list-style-type: none"> Some animals can survive by moving to another ecosystem.
2 On plants	<ul style="list-style-type: none"> Plants depend on their seeds to land in a better place to survive and grow.
3 On human	<ol style="list-style-type: none"> 1. Air pollution (smog) makes human hard to breathe. <ul style="list-style-type: none"> Exposure for high levels of air pollution causes: <ol style="list-style-type: none"> a. Damage of lungs. b. Asthma. c. Heart problems. 2. Water pollution makes the human hard to find clean water to drink. 3. Air, water and soil pollution make crops cannot grow.



▶ What's the role of human to restore the ecosystem.....

1. Replanting the cleared forests.
2. Removing the pollutants of air and water.
3. Preserving the plants and animals in the ecosystems.




NOTES

- Plants and animals may undergo structural and behavioral adaptations to cope with the changes in their ecosystem.

▶ Is there a career to study adaptation...

- Scientists learn how different organisms adapt through researches to help **endangered species** to survive.

Amphibians: They are small animals that need water or moist environment to survive.

Examples	<i>Frogs</i>	<i>Toads</i>	<i>Salamander</i>
			
Habitat	They can live in moist environments as rainforests, stream and ponds.		
Breathing	<ol style="list-style-type: none"> 1. On land: Adult amphibians (like human) can breathe using lungs. 2. In water: they take in oxygen from water by their skin. 		

▶ How amphibians get oxygen from water

- Amphibians are covered with skin allows water and gases to pass through.
- Water surrounds amphibians skin making their skin moist, so they can absorb oxygen directly from water.
- The structural adaptation of the amphibians' skin makes them well-suited to live in wet environment.

▶ Frogs need clean water to stay healthy, so they are sensitive to the effects of

- Water and air pollution.
- Destroying the natural habitat.
- Viruses that travel in water.

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- Scientists try to save many amphibians from extinction.
- Golden frog lives in rainforest habitat is endangered.



Golden frog

Protection of amphibians from extinction

Role of Biologists	Role of People
1. Searching for pollution factors that threaten amphibians in air and water.	1. Avoid throwing wastes in water. 2. Cutting down trees to use their wood. 3. Throwing chemicals into the water. 4. Disposal of chemicals in a correct way. 5. Decrease amount of smog of factories and cars.

Choose ?

1. All of these belong to respiratory system except

- ☐ A Nose ☐ B Lungs ☐ C Trachea ☐ D Esophagus

2. Oxygen gas moves from air to blood at the

- ☐ A Nose ☐ B Throat ☐ C Trachea ☐ D Lungs

3. Air travels down into lungs through a tube called

- ☐ A Throat ☐ B Esophagus ☐ C Trachea ☐ D Diaphragm

4. is a muscle that helps in the exhalation and inhalation.

- ☐ A Tongue ☐ B Stomach ☐ C Diaphragm ☐ D Nose

5. Diaphragm locates at the base of the

- ☐ A Stomach ☐ B Ribs ☐ C Mouth ☐ D Small intestine

6. Contain(s) air sacs called alveoli.

- ☐ A Trachea ☐ B Diaphragm ☐ C Lungs ☐ D Throat

7. Adult frogs can inhale oxygen from water by using their

- ☐ A Lungs ☐ B Skin ☐ C gills ☐ D Ears



8. lie in lungs and they are surrounded by blood vessels.

- ☐ A Alveoli ☐ B Bronchi ☐ C Diaphragm ☐ D Muscles

9. Oxygen gas passes to trachea through

- ☐ A Mouth ☐ B Nose ☐ C Throat ☐ D Lungs

10. Carbon dioxide gas passes from trachea to

- ☐ A Lungs ☐ B Pharynx ☐ C Nose ☐ D Mouth

11. is a common organ in both digestive and respiratory systems.

- ☐ A Nose ☐ B Esophagus ☐ C Trachea ☐ D Throat

12. Fish use to breathe in water.

- ☐ A Tail ☐ B Skin ☐ C Gills ☐ D Lungs

13. All of these are amphibians except

- ☐ A Frogs ☐ B Toads ☐ C Lizards ☐ D Salamanders

14. All of these natural changes in the ecosystem except

- ☐ A Wildfires ☐ B Floods ☐ C Removal of forests ☐ D Drought

15. All of these have lungs except

- ☐ A Frogs ☐ B Human ☐ C Fish ☐ D Dog

Write the scientific term ...?

- The system that is responsible for breathing process. (.....
- The process by which air rich in oxygen gas enters the lungs. (.....
- The process of expelling out carbon dioxide outside the lungs. (.....
- A muscle that contracts and relaxes and helps in respiration process. (.....
- A process by which the body gets oxygen and gets rid of carbon dioxide. (.....
- A tube through which oxygen passes into lungs. (.....
- Air sacs found in lungs. (.....
- They are like balloons and that contain air sacs. (.....
- The organ that follows the throat in the respiratory system. (.....
- A process in which diaphragm muscle contracts moves down. (.....

4th Primary, 1st term

11. A process in which diaphragm muscle relaxes and moves up. (.....)
12. A process in which chest size gets narrow. (.....)
13. A species that includes frogs, toads and salamanders. (.....)
14. The organ through which oxygen passes to lungs. (.....)
15. They surround alveoli and transfer oxygen to blood. (.....)
16. It carries oxygen from lungs to all the body organs. (.....)
17. The organ that helps fish to extract oxygen from water. (.....)
18. The organ that helps salamander to get oxygen from water. (.....)
19. The organ that helps frogs to get oxygen from air. (.....)
20. The gas which is expelled out from fish into water. (.....)
21. The type of adaptation in frogs' skin that enable them to take in oxygen from water. (.....)
22. A type of frogs that is endangered and lives in rainforest habitat. (.....)
23. One of air pollutants that make human hard to breathe. (.....)
24. The living organism is no longer exist on Earth. (.....)
25. A species that has two different ways of respiration. (.....)

Put (✓) or (×), then correct the wrong one ?

1. Rate of breathing increases during running. ()
2. Staying in smoking area keeps our respiratory system healthy. ()
3. Orange and guava are rich in vitamin (A). ()
4. Carbon dioxide travels from trachea to lungs. ()
5. The inhaled air is rich in oxygen gas. ()
6. During inhalation process, diaphragm contracts and moves up. ()
7. Chest size enlarges during exhalation process. ()
8. Exhaled air contains oxygen gas. ()
9. Fish can extract carbon dioxide from water by gills. ()
10. Fish gills' ability to take in oxygen from water is a behavioral adaptation. ()
11. During inhalation, oxygen travel from throat to lungs through esophagus. ()
12. During exhalation, diaphragm expands and moves up. ()
13. Diaphragm moves downward during exhalation process. ()
14. Both human and fish can breathe in air. ()

4th Primary, 1st term

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15. Both human and frogs can breathe in air. ()
16. Fish use gills to breathe in air. ()
17. Gills can extract oxygen gas from water, but lungs extract oxygen from air. ()
18. Slow change in the ecosystem causes many organisms to disappear and die. ()
19. Human activities are from the rapid changes occurring to the ecosystem. ()
20. Pollution of the ecosystem negatively affects only on the plants in it. ()
21. Water pollution causes asthma and lung damage. ()
22. Gills are found at one side of fish's head. ()
23. Cutting down forests may cause the disappearance of the golden frog. ()
24. Human can't restore the ecosystem. ()
25. Wildfires and floods are from the changes occurred by human activities. ()
26. Factories smog causes respiratory problems as asthma and lung damage. ()
27. When an ecosystem is rapidly changed, many organisms may die. ()
28. Plowing grasslands is one of the natural changes occurs to the ecosystem. ()
29. Factories exhausts produce smog that causes air pollution. ()
30. Slow changes to the ecosystem is occurred due to nature. ()
31. Human can restore the ecosystem by replating the cleared forests. ()
32. Removing of air pollutants causes respiratory problems. ()
33. Amphibians live in a dry environment. ()
34. Panther chameleon and golden frog live in the same habitat. ()
35. When the number of a species becomes zero, it means that species is extinct. ()
36. Frogs can take in oxygen gas from air only. ()
37. Golden frog from the extinct species. ()
38. Amphibians and lizards need carbon dioxide to respire and get energy. ()
39. Introducing a new prey to an endangered species increases their numbers in an ecosystem. ()
40. Frogs, agama lizard and toads are from the amphibians. ()
41. Amphibians need clean water and clean air to respire. ()
42. Reptiles and amphibians can be found in the same habitat. ()
43. Panther chameleon is from amphibians, but frogs are from reptiles. ()
44. Amphibians can take in oxygen from water by gills. ()

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45. Amphibians can live in the polar habitat. ()
46. Amphibians aren't sensitive to the changes occur to the ecosystem. ()
47. Golden frog is an endangered species. ()
48. Fish and amphibians have the same structural adaptation in their skins. ()

Give reason for ?

- Golden frog is and endangered species.
.....
- Dry habitat is not suitable for amphibians.
.....
- Air and water pollution affect negatively on amphibians' survival.
.....
- Exhausts of cars and factories cause breathing problems.
.....
- Rapid change is more dangerous than slow change on an ecosystem.
.....
- Fish can't breathe in air.
.....
- Diaphragm is very important in respiration process.
.....
- You must avoid smoking and staying at smoking areas.
.....

What happens if ?

- Diaphragm muscle contracts and move down.
.....
- Diaphragm muscle relaxes and moves upward.
.....
- Ecosystem is rapidly changed.
.....
- Increasing of car and factories exhausts. In an ecosystem.
.....
- Pollution level increases in the habitat of amphibians.
.....



6. Number of amphibians' predators increases.

.....

7. Frogs can only respire by lungs. Frogs skin gets dry.

.....

Match from column (B) what suits it in column (A)

1	(A)	(B)
	1. Salamander	a. Respire oxygen from water by gills.
	2. Fish	b. Respires oxygen from water by skin and from air by lungs.
	3. Human	c. Respires oxygen from water by gills and from air by lungs.
		d. Respires oxygen from air by lungs.

1.

2.

3.

2	(A)	(B)
	1. Golden frog	a. Can live in fresh and salt water.
	2. Bull shark	b. Lives in a moist habitat
	3. Starred agama lizard	c. Can live in dry cold habitat.
	4. Arctic fox	d. Lives in dry hot desert.

1.

2.

3.

4.

3	(A)	(B)
	1. Golden frog	a. Lives in fresh and salt water.
	2. Panther chameleon	b. Is a flyless bird that has weave blood vessels in its feet.
	3. Penguin	c. Is a reptile that lives in rainforest habitat.
	4. Bull shark	d. Is an amphibian whose natural habitat is rainforest.

1.

2.

3.

4.

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Concept 1.2

Sense at work

Stimuli
from surrounding

Affects

Senses

Make

A respond

► **Animals have sharper senses than human.** ?

1. To communicate with each other by using sounds and movements.
2. To adapt to the environment and can survive in it.

NOTES

Humans can use more than one sense at the same time.

Example:

1. We use senses of hearing and sight while watching TV.
2. We use senses of sight, smell and taste while eating pizza.

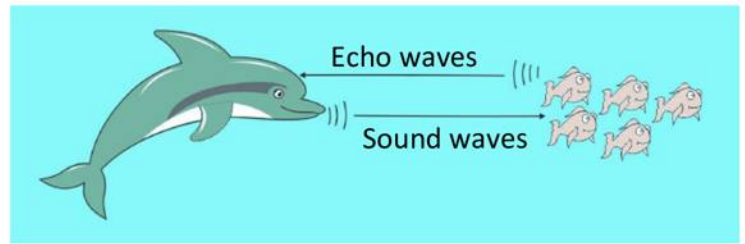
Examples of some sharp senses in some animals:

Animal	Super senses	Purpose
1. The Egyptian mongoose	Hearing chatter	- To communicate with each other by making sounds to move to another place to find food.
2. Dog	Hearing and smell	- Recognize friends by smell. - Hearing distant sounds, so it is used in guarding. - To find food
3. Fox	Hearing and smell	- To avoid danger and run away from enemies. - To find food.
4. Chameleon	Sight and taste	- Its eyes can look at opposite directions to search for food.
5. Monkey	Sight – smell – touch – taste - hearing	- Monkey uses its five senses to identify things to eat. And to face risks.
6. Cat	Sight – smell	- To recognize friends. - To find food by smelling the food scent.
7. Gazelle	Smell and hearing	- To avoid danger.
8. Owl	Sight and hearing	- To search for food.



Dolphin super senses

- Living organisms have different hearing senses.
- Dolphin has a **super sense of hearing**, so it can hear all sound tones.
- Dolphin depends on **echolocation property** to locate its prey in water.

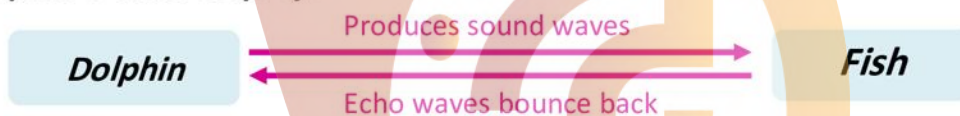


Echo:

Reflection of sound waves when it hits a solid object.

► How does dolphin use echolocation property?

- Dolphin produces sound waves that travel in water.
- Echo waves bounce back when they hit a solid object.
- Dolphin locates its prey.



Echolocation:

A property used by bats and dolphins to determine the location of objects using reflected sound waves.

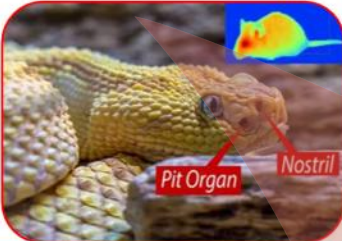


A nocturnal animal:

The animal that sleeps during daytime, and more active at night. (Behavioral adaptation)

Super sensory organs of some nocturnal animals:

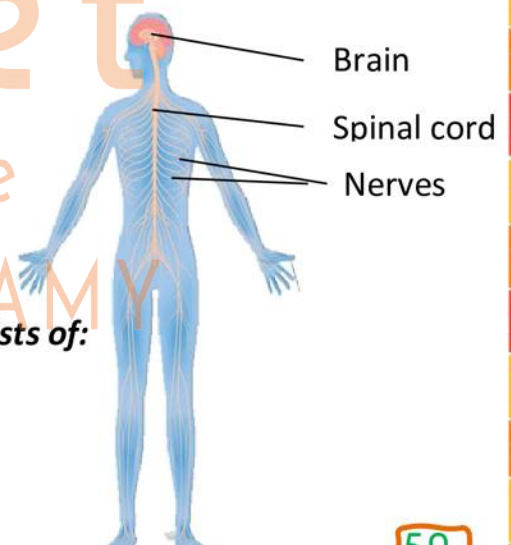
- Human can't see at a dark room, so he depends on other senses as hearing and touching.
- Nocturnal animals can hunt at night without light, due to having super sensory organs.
- G.R. Animals become active at night due to:**
 - Avoid hot weather during the day (as desert animals).
 - Their preys are available at night.
 - Hiding in the darkness from their prey.



Nocturnal animal	Structural adaptation in sensory organs
Snake 	<ul style="list-style-type: none"> Snake is a reptile that can't see at the dark. Snake depends on the sense of heat by a special part in its face. G.R. To locate its prey at dark by sensing their body heat.
Bat 	<ul style="list-style-type: none"> Bat is a mammal. Bat can't see very well in the dark. Bat depends on echolocation property and sense of hearing. G.R. To find its prey in the dark.
Owl 	<ul style="list-style-type: none"> Owl have extraordinary eyesight and hearing. G.R. To detect and amplify the movement and sounds of the distant prey. <p>Owl has:</p> <ol style="list-style-type: none"> Owl has a bowl-shaped face and feathers on its head. G.R. To hear distant prey movement. Owls can rotate its head in all directions. G.R. To search for its prey.

The human nervous system:

- Our five senses are a part of the nervous system.
- Five senses integer with nervous system to gather information from the surrounding environment and processing it.
- The nervous system of the human and mammals consists of:
 - The brain.
 - The spinal cord.
 - The nerves.





Human nervous system

1. Brain

Brain:

It is the main control center of the body.

Function:

It processes the information and makes the proper response for it.



2. Spinal cord

Spinal cord:

- It is a bundle of nerves connected to the brain and it passes through the backbone.
- It branches into smaller nerves called nerves.

Function:

It transfers messages from brain to all the body, and from the body to the brain.



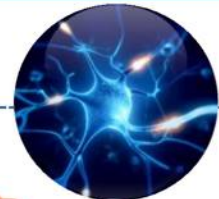
3. Nerves

Nerves:

They are small nerves that branch from the spinal cord and spread in all the body parts.

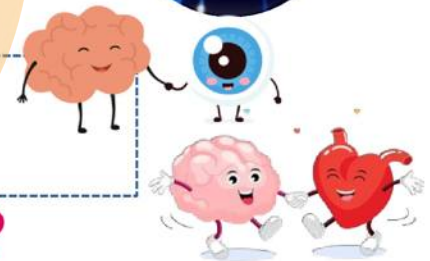
Function:

1. They carry messages from the brain and spinal cord to the body parts.
2. They carry messages from the body parts to the spinal cord and the brain.

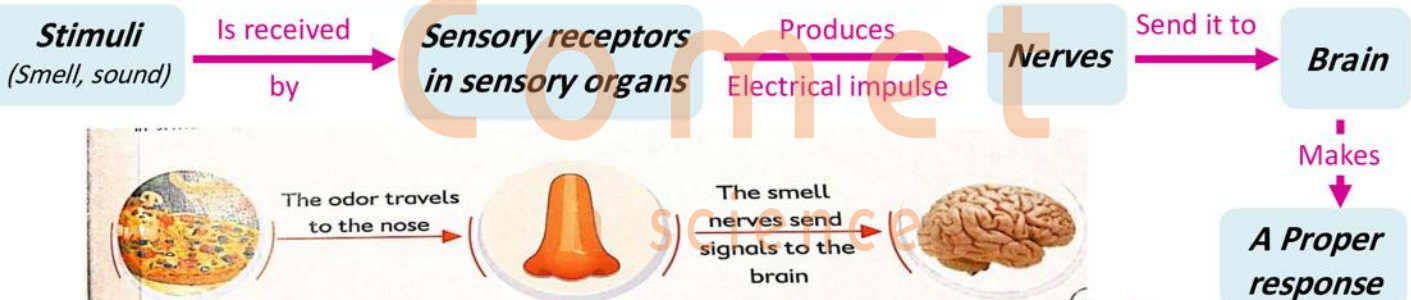


NOTES

- Some nerves are directly connected to the brain as the nerves of the eyes and the heart.



How does the human nervous system work ?



How does the nervous system response to the smell of pizza ?

1. Sensory receptors in the nose receive the smell of pizza.
2. Sensory receptors send signals (electrical impulses) to the brain by nerves.
3. Brain processes the information of smell and makes the proper response as to determine the type of food (by the memory center in the brain).



NOTES

1. Stimuli could be:

- External stimuli as (odor – sound).
- Internal stimuli as (fever – feeling hungry – feeling thirsty).

2. Sensory organs as (eye – nose – ears – skin – tongue) have **sensory receptors**.

3. Signal to breathe is automatically send to or from the brain.

4. Nerves transmit information from sensory organs to the brain in the form of **electrical impulses**.

5. Mammals as human, dogs and elephants have the same structure of the nervous system.

	Function
Sensory organs	Gather information from the surrounding.
Brain	Processing the information and interpret it.
Nerves	<ul style="list-style-type: none"> Transfer messages from the brain to the spinal cord and all body parts. Transfer messages from all body parts and spinal cord to the brain.
Nervous system	<ol style="list-style-type: none"> Collecting information from inside and outside the body. Sending information to the brain through nerves. Understanding this information by brain. Sending a proper response to this information.

Sensory receptors:

They are nerves found in sense organs and they receive information from the surrounding.

Reaction time:

The time taken by the body to react to stimuli.

NOTES

- **Our brain processes what we see faster than what we hear.**
- **Our brain can deal with all information transmitted from five senses at the same time.**
- **A response to a danger is an integration between body muscles and the nervous system.**



Reflex action (reflexes):

It is a rapid response to stimuli by the body to avoid danger.

Or they are messages that the nervous system sends quickly and you can't control them.

Situation	Reflex action
1. Your hand touches a hot object.	You withdraw your hand quickly.
2. Your hand touches the spines of a cactus.	You withdraw your hand quickly.
3. Something gets closer to your eyes.	Your eyes blink.
4. Seeing a red traffic light.	You press car brakes.
5. A rabbit or a jerboa hears a snake moving nearby.	It jumps quickly in less than a minute.

Jumping jerboa:

- Egyptian jerboa is from desert rodents' species.
- It is a tiny animal with very **large ears**, **small eyes** and **long hind legs**.



Jerboa is a desert rodent.

► What are the structural adaptations in jerboa ... ?

1. Legs	Jerboa has long hind legs. G.R. To jump a long distance.
2. Feet	<ul style="list-style-type: none"> Jerboa's feet and toes are covered with hair. G.R. To catch sand when it jumps. Jerboa hops in a zigzag path. To run away quickly from danger.
3. Ears	Jerboa has large ears. G.R. To hear the snake.

► How does jerboa escape from a snake ... ?

When the noise of a snake reaches jerboa's large ears:

1. Sensory receptors in the jerboa's ear send a message to the brain by nerves.
2. Brain translates the message and alerts the legs to move.
3. Jerboa's leg hops in a zigzag path and run away from the danger.



Choose ?

- We use the senses of To differentiate between water and vinegar.
☐ A Sight and taste ☐ B Hearing and taste ☐ C Smell and taste ☐ D Taste and touch
- We use the sense of to describe food odor.
☐ A Sight ☐ B Smell ☐ C Touch ☐ D Taste
- An owl uses the senses of To hunt its prey.
☐ A Smell and hearing ☐ B Sight and smell ☐ C Sight and touch ☐ D Sight and hearing
- Echolocation is used by bat and to locate their prey.
☐ A Owl ☐ B Tarsier ☐ C Honeybees ☐ D Dolphin
- The senses the heat of its prey's body at night.
☐ A Tarsier ☐ B Jerboa ☐ C Owl ☐ D Snake
- We use the sense of to differentiate between a smooth and a rough tissue.
☐ A Hearing ☐ B Touch ☐ C Smell ☐ D Taste
- We use the senses of To distinguish between water and vinegar.
☐ A Taste and hearing ☐ B Taste and smell ☐ C Taste and sight ☐ D Taste and touch
- We can identify the scent of a flower by the sense of
☐ A Touch ☐ B Sight ☐ C Taste ☐ D Smell
- You can feel the hotness or coldness of a cup of tea by the sense of
☐ A Smell ☐ B Sight ☐ C Touch ☐ D Hearing
- Dog uses the senses of in guarding.
☐ A Smell and taste ☐ B Smell and touch ☐ C Smell and sight ☐ D Smell and hearing
- have sharp sense of hearing which they use to locate its prey under water.
☐ A Dogs ☐ B Bats ☐ C Owls ☐ D Dolphins
- The Is the control center of the human nervous system.
☐ A Spinal cord ☐ B Stomach ☐ C Brain ☐ D Heart



13. The sense of In dolphins is stronger than that of the human.
☐ A Sight ☐ B Hearing ☐ C Touch ☐ D Taste
14. All of these have a super sense of hearing except the
☐ A Dolphin ☐ B Owl ☐ C Snake ☐ D Owl
15. The snake has a special part on its to feel the warmth of prey's body.
☐ A Back ☐ B Tail ☐ C Tongue ☐ D Face
16. The has large eyes and a bowl-shaped face to hear its prey.
☐ A Snake ☐ B Bat ☐ C Jerboa ☐ D Owl
17. locates in the backbone.
☐ A Brain ☐ B Spinal cord ☐ C Heart ☐ D Stomach
18. The sensory receptors in the receive scent of a pizza.
☐ A Eyes ☐ B Nose ☐ C Ears ☐ D Tongue
19. The Processes the information collected through the sensory organs.
☐ A Spinal cord ☐ B Brain ☐ C Nerves ☐ D Nose
20. All of these are sensory organs except the
☐ A Eyes ☐ B Nose ☐ C Lungs ☐ D Skin
21. The nerves transmit information from and to the brain in the form of
☐ A Electric impulses ☐ B Light impulses ☐ C Sound impulses ☐ D Mechanical impulses
22. A bat can locate a misquote by the property of
☐ A Camouflage ☐ B Echolocation ☐ C Countershading ☐ D Mimicry
23. Is a flying mammal that uses echolocation to locate its prey.
☐ A Elephant ☐ B Dolphin ☐ C Bat ☐ D Whale
24. is the main control center in the humans and animals bodies.
☐ A Heart ☐ B Brain ☐ C Spinal cord ☐ D Lungs
25. All of these are reptiles except
☐ A Snake ☐ B Chameleon ☐ C Owl ☐ D Agama lizard



26. The has an excellent night vision to hunt its prey.

- ☐ A Bat ☐ B Owl ☐ C Snake ☐ D Jerboa

27. The sensory receptors in the receive sound produced from a radio.

- ☐ A Ears ☐ B Nose ☐ C Tongue ☐ D Eyes

28. The nerves of heart and eyes are directly to the

- ☐ A Spinal cord ☐ B Brain ☐ C Lungs ☐ D Backbone

29. An owl can turn its in all directions to search for a prey.

- ☐ A Eyes ☐ B Nose ☐ C Head ☐ D Tail

30. The spinal cord passes through the

- ☐ A Lungs ☐ B Stomach ☐ C Nose ☐ D Backbone

31. All of these are from the components of the nervous system except the

- ☐ A Spinal cord ☐ B Brain ☐ C Heart ☐ D Nerves

32. The habitat of jerboa is similar to the habitat of

- ☐ A Penguin ☐ B Polar bear ☐ C Arctic fox ☐ D Fennec fox

33. is a desert rodent that has large ears and long hind legs.

- ☐ A Bat ☐ B Caracal ☐ C Jerboa ☐ D Snake

34. system makes you withdraw your hand away when you touch a hot cup of tea.

- ☐ A Digestive ☐ B Respiratory ☐ C Urinary ☐ D Nervous

35. When a snake makes a sound, sensory receptors in jerboa's..... send a message to the brain.

- ☐ A Eyes ☐ B Nose ☐ C Ear ☐ D Leg

36. All of them have large ears except

- ☐ A Jerboa ☐ B Caracal ☐ C Fennec fox ☐ D Polar bear

37. Jerboa's feet and toes are covered with

- ☐ A Fur ☐ B Hair ☐ C Feathers ☐ D Scales



38. Sensation of hot weather depends on the sensory receptors in your

- ☐ A Eyes ☐ B Nose ☐ C Skin ☐ D Ears

39. Closing your eyes quickly when intense light falls on them is a

- ☐ A Reflex action ☐ B Camouflage ☐ C Mimicry ☐ D Countershading

40. The senses of Are responsible for feeling the thunder and lightning.

- ☐ A Sight and smell ☐ B Sight and hearing ☐ C Hearing and taste ☐ D Smell and hearing

41. carry information to brain in the form of electrical impulses.

- ☐ A Bones ☐ B Muscles ☐ C Nerves ☐ D Blood vessels

42. is the organ that identify the sour taste of lemon.

- ☐ A Eye ☐ B Tongue ☐ C Nose ☐ D Skin

43. processes the sound waves coming from a radio.

- ☐ A Spinal cord ☐ B Brain ☐ C Heart ☐ D Nerves

Write the scientific term ...?

- The system that controls all the body functions. (.....)
- A property used by dolphins and bats to locate their prey. (.....)
- A property used to locate objects by reflected sound waves from them. (.....)
- The animal that is more active at night. (.....)
- The type of adaptation when an animal is more active at night. (.....)
- The organ used to distinguish between different types of food. (.....)
- The organ used to distinguish between different odors or scents. (.....)
- The organ used to distinguish between sounds of musical instruments. (.....)
- The organs used to differentiate between different types of colors. (.....)
- The sense used to differentiate between scent of perfume and vinegar. (.....)
- The sense used to differentiate between smooth and rough objects. (.....)
- The sense used to pay attention to an alarm sound. (.....)
- The sharp sense used in dolphins to locate their prey. (.....)
- Bouncing back of sound waves when they hit a solid object. (.....)
- A reptile that senses the heat of its prey by a special part in its head. (.....)

4th Primary, 1st term

16. A property used by bat to avoid hitting objects in the dark. (.....)
17. A bird with a bowl-shaped face and large eyes to locate its prey. (.....)
18. The sharp senses that help owl to hunt. (.....)
19. The type of adaptation the shape of owl's face. (.....)
20. The system that consists of the brain, spinal cord and nerves. (.....)
21. The main control center organ in your body. (.....)
22. The organ that processes information transmitted to it by sensory organs. (.....)
23. A bundle of nerves that passes through the backbone. (.....)
24. They branch from the spinal cord through the whole body. (.....)
25. Organs that receive information from the surrounding. (.....)
26. They are nerves found in the sense organs that receive information from the surrounding. (.....)
27. A flying mammal that uses echolocation to locate its prey. (.....)
28. The form in which information transmitted from sensory organs to the brain. (.....)
29. The natural habitat of the Egyptian jerboa. (.....)
30. A desert rodent that has large ears and long hind legs to hop in zigzag path. (.....)
31. The type of adaptation in which jerboa hops in a zigzag path. (.....)
32. The system that is responsible for reflex actions. (.....)
33. A rapid response to stimuli done by the body to avoid danger. (.....)
34. The type of path in which jerboa hops in danger. (.....)
35. The time taken by the body respond to a stimulus. (.....)
36. They transfer messages between the spinal cord and all body parts. (.....)

Put (√) or (×) ...

1. Sensory organs of a dolphin help it to search for food only. ()
2. We can distinguish between milk and vinegar by sight and taste. ()
3. Ears are the organs of smell. ()
4. The Egyptian mongooses communicate with each other by making sounds. ()
5. The owl has super senses of hearing and smelling. ()
6. Both jerboa and owl have sharp sense of hearing. ()
7. Chameleon has a sharp sense of taste. ()
8. Cats and dogs have sharp sense of smell. ()
9. All animals have super sense of smell. ()

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10. We can differentiate between the taste of food by our skin. ()
11. Dogs have stronger sense of hearing than human. ()
12. Dolphins and bats use the echolocation to locate a prey in water. ()
13. A snake has a super sense of hearing to locate its prey. ()
14. We can identify the scent of a flower by our nose. ()
15. We can feel the hotness or coldness of a cup by the sense of smelling. ()
16. Dog uses the senses of hearing and smell in guarding. ()
17. Dolphins can hear all kinds of sounds. ()
18. Echo of water waves helps dolphin to locate its prey. ()
19. The bat is a nocturnal animal, so it becomes active in the daytime. ()
20. Bat depends on echolocation and sharp hearing to locate its prey. ()
21. The owl has small eyes and a bowl-shaped face. ()
22. The owl can rotate its head in only two directions. ()
23. A bat doesn't hit objects in dark due to hearing the echo reflected from them. ()
24. The nervous system consists of heart, spinal cord and nerves. ()
25. The brain is the control center of the nervous system. ()
26. The brain can deal with all the five senses at the same time. ()
27. Dolphins have stronger hearing than the human. ()
28. Dogs have stronger hearing than the dolphins. ()
29. The animal that depends on echolocation, it must have strong hearing. ()
30. The owl's bowl-shaped face is a behavioral adaptation. ()
31. The snake can sense the cold body of its prey. ()
32. The snake has special parts on its tail to sense the warmth of its prey. ()
33. The spinal cord is located in the skull. ()
34. The snake is a reptile, but the bat is a bird. ()
35. Brain processes the information collected from the five senses. ()
36. Nerves send information to the brain in the form of mechanical impulses. ()
37. Eyes, skin, tongue and heart are from the sensory organs. ()
38. Sensory organs have special nerves called sensory receptors. ()
39. Nerves branch from the spinal cord in all the body parts. ()

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40. The owl depends on echo to locate its prey. ()
41. The bat makes sounds that bounce back from a mosquito, so it locates it. ()
42. Spinal cord transmits messages from and to the brain. ()
43. Sensory receptors are the first part that receive information from surrounding. ()
44. The bat has stronger eyesight than the owl. ()
45. Nocturnal animals hunt at night as the number of preys is few. ()
46. The spinal cord passes through the backbone. ()
47. When you taste a lemon, sensory receptors in eyes send a message to brain. ()
48. Desert animals become active at night. ()
49. An owl can see everywhere by turning its eyes in all directions. ()
50. Information is transmitted from sensory organs to brain through nerves. ()
51. Jerboa is a desert reptile that has large ears and long hind legs. ()
52. You withdraw your hand in two minutes when you touch a cactus's spines. ()
53. Nerves of eyes and heart are directly connected to the brain. ()
54. Hopping of jerboa in a zigzag path is a structural adaptation. ()
55. The long hind legs and large ears of jerboa are a physical adaptation. ()
56. The habitat of jerboa is similar to that of the fennec fox. ()
57. Jerboa can hop for a long distance by its short hind legs. ()
58. All body senses and systems work separately to face a danger. ()
59. Jerboa's feet and toes are covered with feathers. ()
60. Your hand moves away slowly when you touch a very hot object. ()
61. Hearing is a strong sense in jerboa. ()
62. The reaction time is always more than one second. ()
63. Brain explains what we see faster than what we hear. ()
64. Visual reaction time is less than auditory reaction time. ()
65. Body muscles are responsible for moving a person far away from danger. ()
66. A response to a stimulus is an integration between body muscles and nervous system. ()
67. The body can respond to more than a stimulus at the same time. ()
68. Reaction time varies from one species to another. ()
69. When you hear a fire siren, your ears send a signal to the brain. ()

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70. The shorter the reaction time to a danger, an animal has greater chance to survive. ()
71. Sensory organs are responsible for gathering information from the surrounding. ()
72. The brain sends automatic signal to breathe. ()

Give reason for ?

1. Mongoose makes sounds.
.....
2. Dogs are used in hunting.
.....
3. Owls can hunt at night.
.....
4. Dolphins can hear all kinds of sounds.
.....
5. Desert animals become active at night.
.....
6. Snakes have special parts in their face to sense the heat.
.....
7. Owls have bowl-shaped face.
.....
8. Owls can hear even quiet movements of a distant prey.
.....
9. You move your hand away when you touch the cactus's spines.
.....
10. You blink when intense light falls on your eyes.
.....
11. Jerboa can hop for a long distance.
.....
12. Jerboa's feet and toes are covered with hair.
.....
13. Jerboa have large ears.
.....
14. Brain has important role in the nervous system.
.....



What happens if ?

1. Sound waves produced from a dolphin hit an object in water.
.....
2. The part in snake's face that senses heat is injured.
.....
3. Owls don't have a bowl-shaped face.
.....
4. Your hand touches the spines of cactus. Or your hand touches a very hot object.
.....
5. You smell a burning food near you.
.....
6. A jerboa hears the movement of a nearby snake.
.....
7. The sensory receptors in the eye stop sending messages to the brain.
.....

Match from column (B) what suits it in column (A)

1	(A)	(B)
	1. Chameleon	a. Can turn its head in all directions.
	2. Owl	b. Can move its eyes in opposite directions.
	3. Jerboa	c. Has large ears and sharp sense of hearing.
	4. Snake	d. Can't hear well, so it senses the heat of prey's body.

1. 2. 3. 4.

2	(A)	(B)
	1. Spinal cord	a. Receive information from sensory receptors.
	2. Nerves	b. Processes information transmitted from sensory organs.
	3. Brain	c. Passes through the backbone.
	4. Sensory receptors	d. They are types of nerves that are found in the sensory organs.

1. 2. 3. 4.

**3**

(A)	(B)
1. Dog	a. It has strong hearing to locate objects in air by echolocation.
2. Dolphin	b. It has super senses of hearing and sight.
3. Bat	c. It has super senses of hearing and smelling, so it is used in guarding.
4. Owl	d. It has a strong hearing to locate objects in water by echolocation.

1. 2. 3. 4.

4

(A)	(B)
1. Electrical impulses	a. It is a rapid response to an external stimulus.
2. Reflex action	b. They have sensory receptors that receive sounds from the surrounding.
3. Skin	c. They are the form by which information are transmitted through nerves.
4. Ears	d. It is responsible for differentiating between hot and cold objects.

1. 2. 3. 4.

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